

Amendments to the Claims

1. (currently amended) A method for patterning a multilayer resist to reduce development time, comprising the steps of
 depositing a first layer of resist material onto a substrate;
 scanning a beam of radiation to expose a portion of the first layer of resist material;
 depositing a second layer of resist material; and
 scanning a beam of radiation to expose a portion of the second layer of resist material to radiation; and
 varying the dose of radiation delivered to at least one region of the second layer based on the dose delivered to a corresponding region of the first layer,
 whereby the development time is reduced.
2. (original) The method of claim 1 wherein the step of varying the dose of radiation further comprises delivering more pulses of radiation to at least one region.
3. (original) The method of claim 1 wherein the step of varying the dose of radiation further comprises delivering radiation for a longer period of time to at least one region.
4. (original) The method of claim 1 wherein the step of varying the dose of radiation further comprises delivering an increased fluence of radiation to at least one region.
5. (original) The method of claim 1 wherein the method further comprises varying the dose of radiation delivered to at least one region of the first resist layer.
6. (original) The method of claim 1 wherein the steps are repeated until a pattern having greater than two layers has been completed.

7. (original) The method of claim 1 wherein the method further comprises treating the layers with a developing solution to remove the exposed portions of resist when resist is a positive resist or remove the unexposed portions of resist when the resist is a negative resist.

8. (original) The method of claim 1, wherein the method further comprises heating the resist following at least one exposure step.

9. (original) The method of claim 1, wherein the resist material is a positive resist.

10. (original) The method of claim 1, wherein the resist material is a negative resist.

11. (original) The method of claim 1, wherein the resist material is a novolac resin.

12. (original) The method of claim 1 wherein the step of varying the dose of radiation further comprises delivering an increased fluence of radiation to at least one interior region.

13. (currently amended) The method of claim 1 further comprising:

~~depositing a first layer of photoresist onto a substrate;~~

~~exposing first portions of the first layer to a first dose of radiant energy;~~

~~depositing a second layer of photoresist atop the first layer;~~

~~exposing second portions of the second layer to a second modulated dose of radiant energy;~~

wherein ~~modulation of~~ the second ~~modulated~~ dose is determined as a function of second portion locations that reside atop first portions; such second portion locations being interior portions; the dose greater for interior portions than for other second portions.

14. (original) The method according to claim 13, wherein exposing and depositing are repeated a number of times, n, thereby creating an n-layer photoresist preform.

15. (original) The method according to claim 14, wherein modulation of an n-th modulated dose is determined as a function of nth portion locations that reside atop (n-1)st portions; the dose greater at nth portion locations that reside atop (n-1)st portions.

16. (original) A method according to claim 1 further comprising the steps of:

predefining a desired pattern including a vertical profile of exposed and unexposed regions in different layers of a multi-layer resist;

patterning the multilayer resist by repeated depositing layers and exposing portions of each layer to radiation; and

varying a dose of radiation delivered to certain portions of the layers to take into account light penetration between resist layers in order to obtain a uniform predetermined exposure level in each layer.

17. (original) The method of claim 16, wherein the radiation exposure is performed with a laser based vector scanning system.

18. (original) A method of efficiently patterning interior portions of a multilayer photoresist preform, the preform having a perimeter such that interior portions of a layer have interior locations at least a predetermined distance from the periphery, distance from the perimeter measured essentially perpendicular to a central axis of the preform, the method comprising:

depositing a first layer of photoresist onto a substrate;

exposing first portions of the first layer to a first dose of radiant energy;

depositing a second layer of photoresist atop the first layer;

exposing second portions of the second layer to a second modulated dose of radiant energy;

wherein the second modulated dose is modulated as a function of relative spatial location of the first and second portions, the dose greater for interior portions.

19. Canceled

Amendments to the Drawings

The attached sheet of drawings includes changes to FIG. 6b. The sheet, which includes FIG. 6a, replaces the original sheet including FIGS. 6a and 6b. FIG. 6b has been amended to remove “²” from “Surface Energy (dynes/cm²)”.